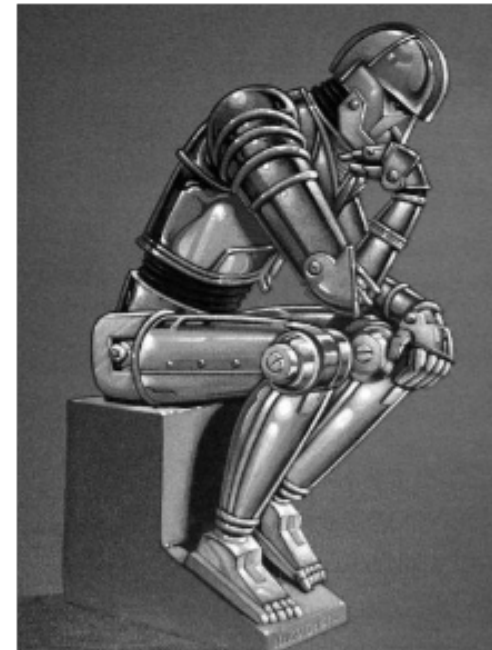# Today's Lecture
4/1/09

- Arguments
- Statements vs. non-statements
- Deductive vs. Inductive arguments

Critical thinking is the study of reasoning and argumentation.

In particular, critical thinking is concerned with how to sort good reasoning from bad reasoning.

What is Logic?

Logic is not subjective, arbitrary, or culturally-relative.

Logic is . . .

the study of methods for evaluating whether the premises of an argument adequately support its conclusion.

An argument is a set of statements where some of the statements, called the *premises*, are intended to support another, called the *conclusion*.

examples of arguments

(1) Rational thought depends on having a natural language. Bees do not have a natural language. Thus bees do not have the capacity for rational thought.

(2) A fetus is a person. Intentionally killing a person is morally wrong. So intentionally killing a fetus is morally wrong.

Arguments, like other things, are tools that we use for certain purposes. Good arguments are those that serve
their purpose well.

Two questions:
(i) What is the goal of an argument?
(ii) Why, in general, should you care?

the goal of an argument

Is it to convince somebody (/yourself) of some claim?

- This is too broad, making the goodness of an argument dependent on the gullibility of a subject or the drugs you give them.
- After putting Nyquil in your drink, I say: (i) My fortune cookie said you will win $1 million today. (ii) Therefore you will win $1 million today. And suppose you come to believe that you will.
- On the present criteria, this would be considered a good argument if you were convinced. But its obviously bad reasoning.

the goal of an argument

Is the goal to just arrive at true beliefs?

- This is better, but still not good enough. Consider:

- Sam says: The universe is roughly 15 billion years old. I saw this ever so clearly when I inhaled from the bag of visions.

- The conclusion is true but the argument is intuitively bad. The reasoning that Sam employs is suspect: in general, hallucinations do not provide one with a good access to facts about the world.

the goal of an argument

- The goal of an argument is to arrive at true beliefs *in the right way* .

- Good arguments do not take you from true beliefs to false beliefs: if the premises are true, then the conclusion will also be true.

(Arguments with this property are called *truth-preserving*)

why should you care?

- Decrease chances of being duped
- Better understanding of yourself and the world
- So you can do well in college, as most disciplines engage in some form of argumentation
- So you can do well on standardized tests (e.g. GRE, LSAT)

An argument is a set of statements where some of the statements, called the *premises*, are intended to support another, called the *conclusion*.

STATEMENTS VS NON-STATEMENTS

- A statement =df a declarative sentence that is either true or false.

Examples:

- We are living in the 21st century.

- GWB eats kittens for breakfast.

- Alex has 5 tentacles.

- Huiyuhl has 2 arms and 10 fingers.

note well

Statements ≠ Questions

- Is Billy going to burning man?
- Don't you want to live the dream?
- Why do I exist?
- What is the nature of color experience?

Statements ≠ Commands

- Get to the chopper!
- Shut your bark hole!
- You want to grab me a drink while you're up.
- Off my lawn!

the main idea

Questions and commands cannot figure into an argument because they are not the sort of thing capable of being true or being false.

/disputed cases/

- Hamlet killed his uncle.
- The slithey toves did gyre and gimble.
- Harry is bald.
- The position of electron e is <x,y> *and the velocity of e is n.*
- Stealing is morally wrong.

DEDUCTIVE & INDUCTIVE ARGUMENTS

contrast these inferences:

All of the marbles in this bag are black.

So, the first marble I pick from this bag will be black.

90% of the marbles in this bag are black.

So, the first marble I pick from this bag will be black.

contrast these:

If one is a human, then one has a genome.

Maynard is a human.

So, Maynard has a genome.

In the past, every time Kim raised her hand in class, she did so intentionally.

Kim just raised her hand in class.

So it follows that Kim raised her hand intentionally.

A deductive argument
=df

The premises of the argument are intended to guarantee its' conclusion.

An inductive argument
=df

The premises of the argument are intended to make probable the conclusion (without guaranteeing it).

Homework #1
Due Monday 4/06

- 1.1 - A: 2, 13, 24, 28 // B: Even // C: 1, 5, 8, 13 // D: 1, 4, 9, 14 (p10)

- 1.2 - A: 1, 4, 10, 11, 24, 29 // B: 1, 3, 6, 15 // C: 5, 7, 12, 13 // D: 2, 5, 11, 12 (p 28)

- 1.3 - A: 1, 8, 12, 15, 18 // B: 2, 4, 8, 11, 17 (p 47)